

**APPENDIX I:
RIPARIAN ASSESSMENT & CHARACTERIZATION OF THE SWAN RIVER
& SELECT TRIBUTARIES**

**RIPARIAN ASSESSMENT & CHARACTERIZATION
of the
SWAN RIVER & SELECT TRIBUTARIES**

**Michael Pipp
Water Quality Specialist/Modeler**

**Montana Department of Environmental Quality
Helena, MT**

September 5, 2002

OVERVIEW

Analysis of the current riparian environment and stream channel characteristics is an essential element to support TMDL development, and subsequent five-year target evaluation, for the Swan River Watershed. The analysis used here quantifies riparian and stream channel parameters and actual or potential threats to the riparian environment or channel stability. Waterbodies assessed included Goat/Squeezer, Jim, Piper, and Elk Creeks - the four streams currently listed as water quality limited by the Montana DEQ 303(d) list and, in addition, the Swan River main stem above Swan Lake. The assessment, using standard photometric, GIS, and mapping analytical techniques, allowed a suite of parameters to be evaluated with reasonable speed, accuracy, and repeatability. The process is documented herein and all assessment data have been entered into a spreadsheet database. Reaches delineated during this assessment have been annotated on 7½-minute USGS quadrangle maps and are on file at the Montana DEQ office in Helena, MT. In addition, the NHD streams layer for the Swan River HUC may be attributed with reach level assessment conditions.

PHOTO INTERPRETATION, MAPPING, & CONDITION ASSESSMENT

Aerial photo interpretation and mapping was performed using 1997 color aerial photos at 1:15,840 scale and 7½' USGS quadrangle maps. The assessment extended from the mouth of the streams to the wilderness boundary (west-side streams) or to where Flathead National Forest (FNF) lands comprised all contributing area and little management, if any, was evident.

Streams were delineated into assessment reaches using the following criteria: 1) ownership boundaries as identified by the NRIS Stewardship Map, 2) significant changes in channel slope and/or valley type, 3) functional change in riparian vegetation, and 4) county line. Each reach was assigned a unique alphanumeric identification using three letters of the stream name followed by a number. Reaches were numbered sequentially from the mouth upstream to the end of the analysis area. Reach breaks were manuscripted on hard copy 7½' USGS quadrangles and may be transferred onto a GIS streams layer employing the NHD stream coverage.

Photo interpretation (PI) and map work allowed for the determination of following parameters: county, ownership, land use, impervious surfaces, riparian structures, active channel width, canopy density (LB/RB), buffer width (LB/RB), vegetation composition (LB/RB), bank condition (LB/RB), and channel confinement (Table 1). The PI work focused on a 300' width along the riparian corridor for buffer width while impervious surfaces and riparian structures were limited to 100' corridors. Initially, the PI work intended to include estimates of tree-to-channel distance, tree-to-channel slope, percent vegetation overhang, and an integrated evaluation of riparian vegetation along both banks. The ability to discern this information from photos at this scale (1:15,840) proved impractical and the first three listed parameters were dropped from the assessment. It was also decided that it would be advantageous to record riparian and stream bank information individually for each the left and right banks. **(Note: left and right banks are defined as facing downstream.)**

Estimation of bank condition proved very difficult with a 1:15,840 photo scale. Banks without obvious signs of instability were noted as “natural” while banks with obvious bare slopes, cut banks, or were otherwise in suspect condition were noted as “bare”.

Subsequent analysis employed GIS tools and coverages provided by the Flathead National Forest including Rosgen channel types, Riparian Land Types (RLT), Grizzly bear linkage zones, and 2001 satellite imagery with 5 meter resolution. The computer-based analysis provided “reach-level” information for Level 1 stream type, sinuosity, and channel slope (from the Rosgen coverage), riparian land types, location inside/outside grizzly bear linkage zones, reach length (measured using ArcView’s measure tool and digital topographic maps - DRGs), and stream order (7½’ quadrangles). In addition, the satellite imagery was used to look for areas/reaches that have had a significant change in riparian forest cover within 300 feet of the stream channel since 1997 – the vintage of the aerial photos.

Refinements to the PI/map reach delineations were made while recording riparian land types. Eight reaches were sub-divided to account for, and align with, RLT delineations defined by the FNF. All other reach breaks delineated from photo interpretation aligned with forest’s RLT designations. Also, the riparian land type designation contains more detailed information concerning valley slope range, channel substrate material, and the potential natural vegetation communities (Sirucek and Bachurski, 1995). An example of a RLT designation is FL2D and the RLT nomenclature is provided in Table 2. Appendix A, Table A1 presents all assessment data.

Table 1. Assessment Parameters.

Assessment Parameter	Resolution	Comments
Canopy Density	10%	Photo estimated; if current riparian trees have CD < 10%, then CD = 0 %
Grizzly Bear Linkage	Yes/No	FNF GIS coverage
Riparian Land Type	Nominal class	FNF Riparian Land Type GIS coverage
Active Channel Width	5 ft.	Photo estimated / measured
Reach Length	25 ft.	GIS measured (ArcView measure tool)
Buffer Width	25 ft.	Photo estimated; 300’ max. (Horizontal Dist.)
Vegetation Composition	Nominal class	Photo estimated; Herbaceous, Deciduous, Conifer, Wetland, Woody
Stream Order (Strahler)	1:24k streams	USGS 7½’ quadrangles
Channel Sinuosity	0.01	FNF Rosgen GIS coverage
Rosgen Channel Type	Level 1	FNF Rosgen GIS coverage
Channel Confinement	Nominal class	Photo/map estimated; Unconfined, Moderate, Confined
Bank Condition	Nominal class	Photo estimated; Natural, Bare, Rip Rap
Land Use Class	Nominal class	Photo & map estimated
Impervious Surface	Yes / No	Photo; within a 100’ corridor of the stream
Riparian Structures	N/A	Count of visible structures with ~100 ft of the channel. Accounting included all visible structures regardless of “footprint” or potential structure type

Table 2. Flathead National Forest Riparian Land Types (Sirucek and Bachurski, 1995)

Differential	Unit Symbol	Definition
Gradient	FL	Flat valley bottoms; 0 – 2 % gradients
Gradient	NL	Nearly level valley bottoms; 2 – 4 % gradients
Gradient	SL	Slightly sloping valley bottoms; 5 – 12 % gradients
Gradient	MS	Moderately steep valley bottoms; 13 – 39 % gradients
Gradient	VS	Very steep valley bottoms; 40 + % gradients
Bed material	1	Clays, silts, fine and medium sand materials
Bed material	2	Coarse sand, gravels, and cobble materials
Bed material	3	Stones and boulder materials
Bed material	4	Bedrock
Bed material	5	Undifferentiated
Potential natural vegetation	A	Subalpine fir habitat types
Potential natural vegetation	B	Grand fir and western red cedar habitat types
Potential natural vegetation	C	Engelmann spruce habitat types
Potential natural vegetation	D	Black cottonwood habitat types
Potential natural vegetation	E	Willow and sedge community or habitat types
Potential natural vegetation	G	Snow avalanche chute plant communities
	UP	Upland habitats surrounded by riparian communities

Parameter Definitions

General

Stream Name

Reach ID – three letters of the stream name and a reach number set sequentially upstream from the mouth

County

Msla – Missoula

Lake – Lake County

Owner

PC – Plum Creek Timber Co. lands or parcels

PC1 – Plum Creek Timber Co. parcels identified for transfer to federal management

PVT – other, undifferentiated private lands

PVT-C – private lands under a conservation management strategy

USFS – Forest Service system lands

DNRC – MT Dept. of Natural Resource Conservation (Swan River State Forest)

DUAL – ownership split between left/right banks

Reach Length – linear stream distance; computed using the ArcView measure tool and USGS digital topographic maps (i.e. DRGs)

Grizzly Bear Linkage – inside/outside of identified zones using the Flathead National Forest Grizzly Bear Linkage GIS coverage.

Riparian Area

Canopy Density – percent shade quality or the effectiveness of vegetation to block sunlight

Land Use

PFOR – Private forest lands

SFOR – State-managed forest lands

NFOR – Federally-managed forest lands

NR – Private Non-Resource Lands (i.e. rural residential; floodplain/wetland)

RS – Apparent resource land, non-forestry

MIX – Mixed private land uses

Impervious Surface – presence/absence of impervious surface(s) within ~ 100' of the stream

Riparian Structures – count of visible structures/building within ~100' of the channel

Buffer Width – averaged width of riparian vegetation (non-herbaceous vegetation only), maximum distance recorded: 300 feet. Measured as horizontal distance, not slope distance.

Vegetation Composition – existing riparian vegetation composition

HB – herbaceous

WDY – woody or shrub (refined to type/genus if possible, i.e. willow)

MD – mixed deciduous stand (refined to type/genus if possible, i.e. cottonwood)

MC – mixed conifer stand (refined to type/genus if possible, i.e. Doug fir)

MD/HB – mixed deciduous and herbaceous

MD/C – mixed deciduous/conifer stand; deciduous dominant

MC/D – mixed deciduous/conifer stand; conifer dominant

WET – wetland species

Riparian Land Type - Flathead National Forest RLT GIS coverage, nominal class ID

Stream Channel

Active Channel – approximate measure of bankfull channel width or channel disturbance area using an engineering scale.

Stream Order – Strahler's numeric ranking system of relative stream size where exterior streams are labeled as "1" and are defined as those that "carry wet weather streams and are normally dry" (Gordon, et. al. 1992, pg. 104) and are identified as blue lines on 1:24,000 USGS quadrangle maps.

Rosgen Level 1 – stream channel classification based on channel slope, sinuosity, valley type, and stream pattern and form. The source of this data is from the Flathead National Forest's Rosgen GIS coverage. Note: Level 1 designation was adjusted to maintain stream types within their designated slope ranges. This coverage was found to have variances where stream types were classified as a particular type even though it's slope exceeded it's normal range. This was most often the case on C-type channels with reported sloped greater than 2%. These streams were reclassified as B-type channels. In addition, where the reaches delineated in this process covered several stream types on the GIS, the GIS values were averaged for the reach.

Bank Condition

NAT – vegetated banks, no evidence of erosion or mass wasting

BR – vegetation reduced or absent; erosion or channel widening evident

RR – presence of riprap or unnatural bank stabilization materials

Channel Confinement

U – Unconfined; floodplain width > 4X bankfull width

M – Moderate Confinement; floodplain width 4X > bankfull width > 2X floodplain width

C – Confined; floodplain width < 2X bankfull width

CURRENT CONDITION VERIFICATION

Given that the vintage of aerial photographs used for this assessment was five years old an effort was made to verify that 1997 riparian conditions had not change dramatically. To achieve this, black and white panchromatic satellite imagery from 2000 or 2001 was used to evaluate the riparian areas of all streams assessed in this report. The source imagery had a five-meter (269 ft²) pixel resolution taken by the Indian Remote Sensing Satellite. Although this is considered high resolution by satellite imagery standards is was still too course to identify, with confidence, any riparian features other than gross canopy removal. Reaches identified as having potential reduction in riparian cover between 1997 and 2000/2001 were limited to the Swan River and include reaches 56, 59, 60, 61, 62, 70, and 71.

In addition to alteration in riparian conditions, there were several shifts in channel location noted from the 1997 aerial photos that occurred subsequent to the USGS mapping. Initial topographic maps were compiled from 1964 photos with selected updates in the early 1990's. Reaches that had (primary) channel migration during this period include Swan River 63, 83, 92-93, 103-105, 109, and 110 and Elk Creek reaches 9 and 10. Slope and sinuosity values for these reaches were calculated from the "old channel" by the Flathead National Forest's Rosgen GIS coverage while the reach lengths were measured by estimating the new primary channel's course in GIS using the ArcView measure tool.

FIELD ASSESSMENTS

Field assessments will be conducted during the summer of 2002. To facilitate fieldwork, reaches were noted during the PI that might warrant on-the-ground measurement. Sampling reaches were identified that would provide surveys of reaches where human activities have had an obvious impact on either riparian vegetation or stream channel stability, as well as, reaches without any obvious human activities. Reaches were also selected to represent all ownerships and Rosgen channel types (Tables 3 and 4). Three reaches were specifically identified for reference condition evaluation and/or ground truthing the PI work. However, limited ground truthing is believed to be necessary since most of the parameters derived from photo interpretation can be cross-referenced using the Flathead National Forest's GIS coverage's, and specifically, the RLT data which under went extensive ground truthing and field validation during it's development (Sirucek and Bachurski, 1995). Furthermore, the data collected from this effort is not destine to be used in any way to model water quality in the basin, but solely as a tool by which to evaluate current conditions and conditions at a later date using a repeatable method.

Field assessments of Elk, Goat/Squeezer, Jim, and Piper Creeks will use accepted field measurement protocols and procedures determined by Montana DEQ. Where ground truthing is conducted, specific to the PI work, it should consist of reaches 200 feet in length were PI values were determined specifically for that area. Measurements should be conducted at three transects

(bottom, middle, and top) along the ~ 200 foot reach. The reach value for each parameter is computed by averaging all measurements taken. Field measurements should then be compared to photo-interpreted or map derived values and adjustments made to existing conditions if indicated. The only parameters that need to be ground truthed are active channel width and canopy density (LB/RB). Channel width measurements will be taken using either a standard engineering tape or range finder at bank full indicators. Canopy density measurements should be taken with a densiometer following the protocol outlined in Platts et al., 1987 pg. 58.

Table 3. 2002 Field Assessment Reach Identification.

Stream	Reach	Length (ft)	Owner	RLT	Rosgen	Comments
Piper Cr	2	2450	PVT	NL2A	B	Developed – reduced vegetation, RRT
Piper Cr	3	900	PVT	NL2A	B	Developed with better buffer/vegetation, RRT
Piper Cr	5	950	USFS	NL2A	B	d/s of Rd 966 to reach end
Piper Cr	6	1100	USFS	NL2A	A	Full buffer, mature trees
Piper Cr	10	1575	PCTC	MS5A	B	Landslide RLF; bare right bank?
Piper Cr	14	1375	PCTC	MS5A	A	Large buffers (Reference / Ground Truth)
Jim Cr	4	2425	PCTC	FL2C	C	Riparian mosaic
Jim Cr	5	2675	PVT	FL2C	B	FS access via Rd 888; start u/s → d/s
Jim Cr	11	550	USFS	NL2E	A	Access via Rd 9798
Jim Cr	14	2475	USFS	SL2A	A	No harvest
Jim Cr	15	3225	PCTC	SL2A	A	Access to middle of reach – Rd 10296 → PC road
Jim Cr	24	2575	PCTC	SL2A	A	CC's minimal buffers; erosion/accumulation?
Elk Cr	2	1275	PCTC	FL2C	C	Access on PCT Rd via Condon; road crossing d/s; GT site: top of 1 st bend d/s → u/s ~500'
Elk Cr	3	2450	PCTC	FL2C	C	Survey 1000' u/s of road crossing
Elk Cr	6	3275	PCTC	FL2C	C	Channel bars, wide channel area; post '97 harvests
Elk Cr	9	850	PVT	FL2C	C	"New" channel
Elk Cr	13	1250	USFS	NL2A	C	Good buffers / no harvest; access via Rd 2591
Goat Cr	3	1450	SRSF	FL2C	C	u/s of Hwy 83
Goat Cr	7	775	USFS	FL2C	B	Riparian harvest; off of Rd 554
Goat Cr	9	3700	SRSF	FL2C	C	u/s of Rd 568 stream crossing; Reference? / Ground truth segment
Goat Cr	10	2000	PCTC	FL2C	B	Harvested; access off of Rd 554
Goat Cr	11	1050	SRSF	FL2C	C	Access off of Rd 554
Goat Cr	16	1925	PCTC	WS5A	B	Measure u/s ½ of reach (possible reference)

Table 4. Reaches identified and selected for field assessment in 2002. Reaches have been sorted by: 1st - Rosgen channel type, 2nd - owner, and 3rd – evidence of human activities impacting the channel/riparian area.

Stream/Reach #	Length (ft)	Rosgen	Owner	Human Impacts	RLT	1997 Photo #	USGS Quadrangle
Jim Cr / 14	2475	A	USFS	No	SL2A	697-28	Peck Lake
Piper Cr / 6	1100	A	USFS	No	NL2A	697-33	Salmon-Prairie
Jim Cr / 11	550	A	USFS	Yes	NL2E	697-29	Peck Lake
Piper Cr / 14	1375	A	PCTC	No	MS5A	197-148	Salmon-Prairie
Jim Cr / 15	3225	A	PCTC	Yes	SL2A	697-28	Peck Lake
Jim Cr / 24	2575	A	PCTC	Yes	SL2A	1397-116	Peck Lake
Goat Cr / 7	775	B	USFS	Yes	FL2C	197-38	Cilly Creek
Piper Cr / 5	950	B	USFS	Yes	NL2A	697-33	Salmon-Prairie
Goat Cr / 16	1925	B	PCTC	No	WS5A	1397-26	Thunderbolt Mtn
Goat Cr / 10	2000	B	PCTC	Yes	FL2C	197-39	Cilly Creek
Piper Cr / 10	1575	B	PCTC	Yes	MS5A	197-148	Salmon-Prairie
Jim Cr / 5	2675	B	PVT	No	FL2C	697-30	Salmon-Prairie
Piper Cr / 2	2450	B	PVT	Yes	NL2A	697-34	Salmon-Prairie
Piper Cr / 3	900	B	PVT	Yes	NL2A	697-34	Salmon-Prairie
Elk Cr / 13	1250	C	USFS	No	NL2A	197-19	Hemlock Lake
Elk Cr / 2	1275	C	PCTC	No	FL2C	197-64	Condon
Elk Cr / 3	2450	C	PCTC	No	FL2C	197-64	Condon
Jim Cr / 4	2425	C	PCTC	No	FL2C	197-30	Salmon-Prairie
Elk Cr / 6	3275	C	PCTC	Yes	FL2C	197-65	Peck Lake
Elk Cr / 9	850	C	PVT	No	FL2C	197-65	Peck Lake
Goat Cr / 3	1450	C	SRSF	No	FL2C	697-39	Salmon-Prairie
Goat Cr / 9	3700	C	SRSF	No	FL2C	197-39	Cilly Creek
Goat Cr / 11	1050	C	SRSF	No	FL2C	1397-12	Cilly Creek

REFERENCES

- Gordon, N. D., T. A. McMahon, B. L. Finlayson, 1992. *Stream Hydrology: an introduction for Ecologist*. John Wiley and Sons, Inc., New York, NY. 526 p.
- Platts, W.S., et. al., 1987. *Methods for evaluating riparian habitats with applications to management*. USFS Forest Service, Intermountain Research Station, Ogden Utah. GTR-INT-221.
- Sirucek, D. and V. Bachurski, 1995. *Riparian Landtype Survey of the Flathead National Forest Area, Montana*. USDA Forest Service, Kalispell, MT. 56 p.

APPENDIX A
Assessment Data Tables

Table A1. 2001 Stream Channel and Riparian Condition Reach Assessment Data

Stream Name	Reach Name	County	Owner	Land Use	Grizzly Bear Linkage	Impervious Surface	Riparian Structures	Reach Length (ft)	Active Channel (ft)	LB Canopy Density	LB Buffer (ft)	LB Vegetation	LB Bank Condition	RB Canopy Density	RB Buffer (ft)	RB Vegetation	RB Bank Condition	Stream Order	Riparian Land Type	Channel Sinuosity	Stream Slope	Rosgen Level 1 Channel	Channel Confinement	COMMENTS / DISTURBANCE
Elk Cr	Elk1	Msla	PC	PFOR	N	N		1075	100	0.1	50	MC/D	NAT	0.1	50	MC/D	NAT	4	FL2D	1.09	1.38	C	U	Riparian Mosaics; Channel & Point Bars; Swan River has shifted onto the lower 600 feet of Elk Creek as depicted on USGS quadrangle
Elk Cr	Elk2	Msla	PC	PFOR	N	Y		1275	60	0.2	100	MC	NAT	0.7	200	MC	NAT	4	FL2C	1.09	1.38	C	M	Riparian Mosaic-RLF
Elk Cr	Elk3	Msla	PC	PFOR	N	N		2450	60	0.2	100	MC	NAT	0.4	100	MC	NAT	4	FL2C	1.09	1.38	C	M	Riparian Mosaic; Harvest; Road Crossing
Elk Cr	Elk4	Msla	PC	PFOR	N	N		775	40	0.1	50	MC	NAT	0.8	300	MC	NAT	4	FL2C	1.09	1.38	C	M	Riparian Harvest-RLF; Channel Bars?
Elk Cr	Elk5	Msla	PC	PFOR	N	N		2675	100	0.3	100	MC	BR	0.7	50	MC/D	BR	4	FL2C	1.09	1.38	C	M	Narrow Buffer; Braided / Bars; Distributary Channel
Elk Cr	Elk6	Msla	PC	PFOR	N	N		3275	100	0.2	50	MC/D	BR	0.5	300	MC/D	BR	4	FL2C	1.13	1.60	C	M	Riparian Mosaics; Channel Bars; post-97 harvest RLF
Elk Cr	Elk7	Msla	PC	PFOR	N	N		575	60	0.3	50	MC	NAT	0.6	300	MC	NAT	4	FL2C	1.14	1.78	C	M	Narrowing Channel; No Bars; post-97 harvest RLF
Elk Cr	Elk8	Msla	PVT	NR	N	N	1	400	60	0.5	250	MC/D	NAT	0.7	300	MC	NAT	4	FL2C	1.14	1.78	C	M	Small Homesite On Sect. Line-25' Buffer
Elk Cr	Elk9	Msla	PVT	NR	N	N		850	80	0.2	250	MC/D	BR	0.6	300	MC	BR	4	FL2C	1.05	1.20	C	M	New Channel (Length = EST); Large Bar; Mosaic RLF; Sinuosity & Slope = Old Channel #'s
Elk Cr	Elk10	Msla	PC	PFOR	N	N		800	60	0.1	250	MC/D	NAT	0.6	300	MC	NAT	4	FL2C	1.37	2.37	B	M	Riparian Harvest / Mosaic-RLF
Elk Cr	Elk11	Msla	PC	PFOR	N	N		6025	60	0.4	200	MC/D	NAT	0.5	200	MC/D	NAT	4	FL2C	1.36	2.61	C	C	Old Riparian Harvests; Sinuosity & Slope Averaged
Elk Cr	Elk12	Msla	USFS	NFOR	N	Y		2800	60	0.3	50	MC/D	NAT	0.8	250	MC	NAT	4	FL2C	1.35	1.70	C	C	Harvest w/ Small Buffer-RLF; Road Crossing
Elk Cr	Elk13	Msla	USFS	NFOR	N	N		1250	40	0.6	300	MC/D	NAT	0.8	300	MC	NAT	4	NL2A	1.35	1.70	C	C	Some Mosaic RLF; Improving Channel
Elk Cr	Elk14	Msla	USFS	NFOR	Y	N		5975	60	0.8	300	MC	NAT	0.8	300	MC	NAT	4	NL2A	1.12	2.21	C	C	Intact Forest; No Channel Bar Evidence; Sinuosity & Slope Averaged
Elk Cr	Elk15	Msla	USFS	NFOR	Y	N		1375	60	0.0	100	WDY	NAT	0.0	150	WDY	NAT	4	NL2A	1.50	0.02	E	M	Open Riparian Meadow; Forest Beyond Meadow
Elk Cr	Elk16	Msla	USFS	NFOR	Y	N		1175	40	0.7	300	MC	NAT	0.6	300	MC	NAT	4	NL2A	1.03	1.56	C	C	Forested

Table A1. 2001 Stream Channel and Riparian Condition Reach Assessment Data

Stream Name	Reach Name	County	Owner	Land Use	Grizzly Bear Linkage	Impervious Surface	Riparian Structures	Reach Length (ft)	Active Channel (ft)	LB Canopy Density	LB Buffer (ft)	LB Vegetation	LB Bank Condition	RB Canopy Density	RB Buffer (ft)	RB Vegetation	RB Bank Condition	Stream Order	Riparian Land Type	Channel Sinuosity	Stream Slope	Rosgen Level 1 Channel	Channel Confinement	COMMENTS / DISTURBANCE
Elk Cr	Elk17	Msla	USFS	NFOR	Y	N		2175	60	0.0	200	WDY	NAT	0.0	200	WDY	NAT	4	NL1E	1.36	0.20	E	M	Braided Upper 1/3; Large Meander Bends
Elk Cr	Elk17.1	Msla	USFS	NFOR	Y	N		400	40	0.8	300	MC	NAT	0.7	300	MC	NAT	4	NL1E	1.07	4.68	A	C	Falls / Cataracts
Elk Cr	Elk18	Msla	USFS	NFOR	Y	N		1300	40	0.8	300	MC	NAT	0.7	300	MC	NAT	4	NL2A	1.07	4.68	A	C	Falls / Cataracts
Elk Cr	Elk19	Msla	USFS	NFOR	Y	N		2275	60	0.4	300	WDY	NAT	0.4	300	WDY	NAT	4	NL1E	1.63	0.84	E	M	Large Meander Bends; Riparian Mosaic
Elk Cr	Elk19.1	Msla	USFS	NFOR	Y	N		750	60	0.6	300	MC	NAT	0.8	300	MC	NAT	4	NL1E	1.32	0.84	E	C	
Elk Cr	Elk20	Msla	USFS	NFOR	Y	N		1725	60	0.6	300	MC	NAT	0.8	300	MC	NAT	4	NL1A	1.32	0.84	E	C	
Elk Cr	Elk20.1	Msla	USFS	NFOR	Y	N		1900	60	0.5	300	MC	NAT	0.2	200	MC	NAT	4	NL1E	1.32	0.84	E	M	Large Meander Bends; Riparian Mosaics
Elk Cr	Elk21	Msla	USFS	NFOR	Y	N		550	60	0.5	300	MC	NAT	0.2	200	MC	NAT	4	NL2A	1.32	0.84	E	M	Large Meander Bends; Riparian Mosaics
Elk Cr	Elk22	Msla	USFS	NFOR	Y	N		1075	40	0.5	300	MC	NAT	0.7	300	MC	NAT	4	NL2A	1.16	5.39	A	C	Steep Channel / Cataract
Elk Cr	Elk23	Msla	USFS	NFOR	Y	N		4725	60	0.7	300	MC	NAT	0.7	300	MC	NAT	4	NL2A	1.07	2.74	B	C	Sinuosity & Slope Averaged
Elk Cr	Elk24	Msla	USFS	NFOR	Y	N		850	60	0.4	300	MC	NAT	0.6	300	MC	NAT	4	NL2A	1.02	0.51	C	C	

Goat Cr	Got1	Lake	DNRC	SFOR	N	N		625	40	0.1	100	MC/D	NAT	0.2	200	MC	NAT	4	FL2D	1.25	0.95	C	U	SRSF HQ Compound
Goat Cr	Got2	Lake	DNRC	SFOR	N	Y	6	1625	40	0.6	300	MC	NAT	0.7	250	MC	NAT	4	FL2D	1.25	0.95	C	U	SRSF HQ Buildings-Southside; Hwy 83
Goat Cr	Got3	Lake	DNRC	SFOR	N	N		1450	40	0.7	300	MC	NAT	0.6	300	MC/D	NAT	4	FL2C	1.25	0.95	C	M	Gravel Pit(s); Forest Rd 554 (N) Beyond Buffer
Goat Cr	Got4	Lake	USFS	NFOR	N	N		525	40	0.5	50	MC/D	NAT	0.6	300	MC	NAT	4	FL2C	1.25	0.95	C	M	Harvest-RLF; Squeezer Cr. Confluence

Table A1. 2001 Stream Channel and Riparian Condition Reach Assessment Data

Stream Name	Reach Name	County	Owner	Land Use	Grizzly Bear Linkage	Impervious Surface	Riparian Structures	Reach Length (ft)	Active Channel (ft)	LB Canopy Density	LB Buffer (ft)	LB Vegetation	LB Bank Condition	RB Canopy Density	RB Buffer (ft)	RB Vegetation	RB Bank Condition	Stream Order	Riparian Land Type	Channel Sinuosity	Stream Slope	Rosgen Level 1 Channel	Channel Confinement	COMMENTS / DISTURBANCE
Goat Cr	Got5	Lake	USFS	NFOR	N	N		3275	30	0.2	100	MC	NAT	0.5	300	MC/D	NAT	3	FL2C	1.03	1.25	C	M	Harvest-RLF
Goat Cr	Got6	Lake	USFS	NFOR	N	Y		1225	30	0.6	150	MC	NAT	0.6	250	MC	NAT	3	FL2C	1.07	1.00	C	C	Road Impinging-RRT
Goat Cr	Got7	Lake	USFS	NFOR	N	N		775	30	0.7	100	MC	NAT	0.1	25	MC	BR	3	FL2C	1.02	2.53	B	M	Riparian Harvest-RRT
Goat Cr	Got8	Lake	DNRC	SFOR	Y	Y		1525	30	0.7	300	MC	NAT	0.5	300	MC	NAT	3	FL2C	1.02	2.53	B	M	Roads w/in Riparian
Goat Cr	Got9	Lake	DNRC	SFOR	Y	N		3700	30	0.3	300	MC/D	NAT	0.4	300	MC/D	NAT	3	FL2C	1.04	1.30	C	M	Riparian Mosaic-Conifer / Shrubs
Goat Cr	Got10	Lake	PC	PFOR	Y	N		2000	40	0.3	100	MC	NAT	0.1	50	MC/D	NAT	3	FL2C	1.02	2.36	B	M	Harvested; Bar Formation
Goat Cr	Got11	Lake	DNRC	SFOR	Y	N		1050	40	0.5	150	MC	NAT	0.5	50	MC	NAT	3	FL2C	1.07	1.97	C	M	Bank Status?; Sinuosity & Slope Averaged
Goat Cr	Got12	Lake	DNRC	SFOR	Y	Y		1850	40	0.8	300	MC	NAT	0.6	150	MC	NAT	3	FL2C	1.09	5.13	A	C	Road-RRT; Sinuosity & Slope Averaged
Goat Cr	Got13	Lake	DNRC	SFOR	Y	N		3125	30	0.8	300	MC	NAT	0.8	300	MC	NAT	3	WS5A	1.04	3.61	B	C	Enters "Canyon"; Channel Size?; Sinuosity & Slope Averaged
Goat Cr	Got14	Lake	PC	PFOR	Y	N		3200	30	0.7	150	MC	NAT	0.4	50	MC	NAT	3	WS5A	1.06	6.21	A	C	Riparian Harvests; Sinuosity & Slope Averaged
Goat Cr	Got15	Lake	PC	PFOR	Y	Y		900	30	0.8	150	MC	NAT	0.8	100	MC	NAT	3	WS5A	1.09	5.72	A	C	Road Crossing; Riparian Harvest; Landing; Sinuosity & Slope Averaged
Goat Cr	Got16	Lake	PC	PFOR	Y	N		1925	30	0.7	250	MC	NAT	0.7	250	MC	NAT	3	WS5A	1.07	4.41	B	C	Road to Section Line ~ Edge of 300' Riparian
Goat Cr	Got17	Lake	USFS	NFOR	Y	N		3150	30	0.7	300	MC	NAT	0.7	300	MC	NAT	3	WS5A	1.03	6.69	A	C	Road RRT- Lower 1/3 of Hill slope; Scout Cr. Confluence; Sinuosity & Slope Averaged
Goat Cr	Got18	Lake	USFS	NFOR	Y	Y		1050	25	0.6	300	MC	NAT	0.6	250	MC	NAT	3	WS5A	1.03	5.93	A	C	Road RRT- Lower 1/3 of Hill slope; Sinuosity & Slope Averaged
Goat Cr	Got19	Lake	USFS	NFOR	Y	N		1850	25	0.6	300	MC	NAT	0.6	125	MC	NAT	3	WS5A	1.00	6.93	A	C	Harvest RRT
Goat Cr	Got20	Lake	USFS	NFOR	Y	N		2675	25	0.3	300	MC	NAT	0.4	300	MC	NAT	3	WS5A	1.00	6.45	A	C	Jammer Roads / Harvest RLF

Table A1. 2001 Stream Channel and Riparian Condition Reach Assessment Data

Stream Name	Reach Name	County	Owner	Land Use	Grizzly Bear Linkage	Impervious Surface	Riparian Structures	Reach Length (ft)	Active Channel (ft)	LB Canopy Density	LB Buffer (ft)	LB Vegetation	LB Bank Condition	RB Canopy Density	RB Buffer (ft)	RB Vegetation	RB Bank Condition	Stream Order	Riparian Land Type	Channel Sinuosity	Stream Slope	Rosgen Level 1 Channel	Channel Confinement	COMMENTS / DISTURBANCE
Goat Cr	Got21	Lake	USFS	NFOR	Y	N		2450	25	0.3	150	MC	NAT	0.2	150	MC	NAT	3	NL2A	1.01	1.38	C	M	Riparian Harvest; Jammer Rd Harvest
Goat Cr	Got22	Lake	USFS	NFOR	Y	N		1400	25	0.6	200	MC	NAT	0.6	200	MC	NAT	3	NL2A	1.08	4.57	A	M	Riparian Harvest; Bethel Cr. Confluence; Sinuosity & Slope Averaged
Goat Cr	Got23	Lake	USFS	NFOR	Y	Y		850	15	0.6	300	MC	NAT	0.6	150	MC	NAT	2	SL2B	1.01	7.14	A	M	Road Crossing
Goat Cr	Got24	Lake	USFS	NFOR	Y	N		850	15	0.7	100	MC	NAT	0.7	300	MC	NAT	2	MS3B	1.00	14.96	Aa	C	Riparian Harvest-Both Sides

Squeezer Cr	Squ1	Lake	USFS	NFOR	N	N		3450	40	0.4	100	MC/D	NAT	0.4	100	MC/D	NAT	3	FL2C	1.06	2.19	B	M	Harvest w/ Narrow Riparian Buffer
Squeezer Cr	Squ2	Lake	USFS	NFOR	N	N		2375	40	0.5	200	MC	NAT	0.4	200	MC	NAT	3	FL2C	1.12	2.22	B	C	"Canyon"; Harvested Beyond Buffer
Squeezer Cr	Squ3	Lake	DNRC	SFOR	N	N		400	40	0.7	300	MC	NAT	0.7	100	MC	NAT	3	FL2C	1.12	2.22	B	C	RRT Buffer Reduced by Harvest on Adjoining Parcels (FNF, PCTC)
Squeezer Cr	Squ4	Lake	PC	PFOR	N	N		2775	40	0.1	250	WDY	NAT	0.2	200	MC/D	NAT	3	FL2C	1.03	1.50	C	U	Riparian Mosaics; Harvested Section
Squeezer Cr	Squ5	Lake	PC	PFOR	N	N		2350	40	0.3	250	MC/D	NAT	0.2	100	MC/D	NAT	3	FL2C	1.05	1.12	C	U	Riparian Mosaic; Harvested Sect
Squeezer Cr	Squ6	Lake	PC	PFOR	N	N		2075	40	0.5	300	MC	NAT	0.2	50	MC	BR	3	FL2C	1.04	2.19	B	U	Riparian Harvest RRT; Bank Condition?; Sinuosity & Slope Averaged
Squeezer Cr	Squ7	Lake	DNRC	SFOR	N	N		850	30	0.7	300	MC	NAT	0.7	300	MC	NAT	3	FL2C	1.04	2.79	B	C	No Harvest DNRC Sect; Sinuosity & Slope Averaged
Squeezer Cr	Squ7.1	Lake	DNRC	SFOR	N	N		500	30	0.7	300	MC	NAT	0.7	300	MC	NAT	3	NL2A	1.04	2.79	B	C	No Harvest DNRC Sect; Sinuosity & Slope Averaged
Squeezer Cr	Squ8	Lake	PC	PFOR	N	N		2250	30	0.7	300	MC	NAT	0.7	300	MC	NAT	3	NL2A	1.05	1.94	C	M	Nice Riparian Stand
Squeezer Cr	Squ9	Lake	PC	PFOR	N	Y		1400	30	0.7	250	MC	NAT	0.7	100	MC	NAT	3	NL2A	1.05	1.94	C	M	Old Riparian Road & Harvest
Squeezer Cr	Squ10	Lake	PC	PFOR	N	N		1750	20	0.7	150	MC	NAT	0.7	150	MC	NAT	3	NL2A	1.07	4.92	A	C	Harvests; Select RRT; CC RLF; Road Crossing; Sinuosity & Slope Averaged

Table A1. 2001 Stream Channel and Riparian Condition Reach Assessment Data

Stream Name	Reach Name	County	Owner	Land Use	Grizzly Bear Linkage	Impervious Surface	Riparian Structures	Reach Length (ft)	Active Channel (ft)	LB Canopy Density	LB Buffer (ft)	LB Vegetation	LB Bank Condition	RB Canopy Density	RB Buffer (ft)	RB Vegetation	RB Bank Condition	Stream Order	Riparian Land Type	Channel Sinuosity	Stream Slope	Rosgen Level 1 Channel	Channel Confinement	COMMENTS / DISTURBANCE
Squeezer Cr	Squ10.1	Lake	PC	PFOR	N	N		1850	20	0.7	150	MC	NAT	0.7	150	MC	NAT	3	SL2A	1.07	4.92	A	C	Harvests; Select RRT; CC RLF; Road Crossing; Sinuosity & Slope Averaged
Squeezer Cr	Squ11	Lake	DNRC	SFOR	N	N		1575	20	0.6	300	MC	NAT	0.6	300	MC	NAT	3	SL2A	1.04	10.33	A	C	
Squeezer Cr	Squ12	Lake	DNRC	SFOR	N	N		3150	20	0.8	300	MC	NAT	0.8	250	MC	NAT	3	SL2A	1.00	9.72	A	C	Dense Riparian; Road & Harvested-RLF
Squeezer Cr	Squ13	Lake	DNRC	SFOR	N	N		925	15	0.8	300	MC	NAT	0.8	200	MC	NAT	3	MS4A	1.00	20.65	Aa	C	Nick Point; Steep Channel; Talus Slopes RRT
Squeezer Cr	Squ14	Lake	PC	PFOR	N	N		2530	15	0.8	300	MC	NAT	0.8	250	MC	NAT	3	SL2A	1.00	6.83	A	C	Talus Slope RRT
Squeezer Cr	Squ15	Lake	PC	PFOR	N	N		2775	15	0.8	300	MC	NAT	0.8	300	MC	NAT	3	SL2A	1.00	8.14	A	C	

Jim Cr	Jim1	Lake	PVT	NR	N	N		2550	80	0.1	300	WET	NAT	0.1	300	WET	NAT	3	FL2D	1.43	0.53	E	U	No Development / Intrusion (97); Riparian Mosaic
Jim Cr	Jim2	Lake	PVT	NR	N	N		2250	80	0.1	300	WET	NAT	0.1	300	WET	NAT	3	FL2D	1.13	0.69	C	U	No Development / Intrusion (97); Riparian Mosaic
Jim Cr	Jim3	Lake	PC	PFOR	N	N		1750	80	0.1	100	MC/D	NAT	0.1	100	MC/D	NAT	3	FL2D	1.13	0.69	C	U	No Obvious Riparian Management; Old Bridge Site
Jim Cr	Jim4	Lake	PC	PFOR	N	Y		2425	60	0.1	100	MC/D	NAT	0.1	100	MC/D	NAT	3	FL2C	1.13	0.69	C	U	Old Access Road RRT; Riparian Mosaics (Old Harvest?)
Jim Cr	Jim5	Lake	PVT	NR	N	Y	6	2675	40	0.4	150	MC	NAT	0.6	300	MC	NAT	3	FL2C	1.08	2.26	B	M	Residential Development RLF; Sinuosity & Slope Averaged
Jim Cr	Jim6	Lake	USFS	NFOR	N	Y		850	40	0.5	300	MC	NAT	0.6	300	MC	NAT	3	MS5A	1.04	3.14	B	M	System Road Crossing; Private Access Rd-RLF
Jim Cr	Jim7	Lake	USFS	NFOR	N	N		1350	30	0.5	300	MC	NAT	0.8	300	MC	NAT	3	MS5A	1.30	2.91	B	M	No Intrusions
Jim Cr	Jim8	Lake	PC	PFOR	N	N		1375	30	0.6	250	MC	NAT	0.7	300	MC	NAT	3	MS5A	1.15	2.25	B	M	
Jim Cr	Jim9	Lake	PC	PFOR	N	N		1000	30	0.7	300	MC	NAT	0.7	200	MC	NAT	3	MS5A	1.09	2.52	B	M	

Table A1. 2001 Stream Channel and Riparian Condition Reach Assessment Data

Stream Name	Reach Name	County	Owner	Land Use	Grizzly Bear Linkage	Impervious Surface	Riparian Structures	Reach Length (ft)	Active Channel (ft)	LB Canopy Density	LB Buffer (ft)	LB Vegetation	LB Bank Condition	RB Canopy Density	RB Buffer (ft)	RB Vegetation	RB Bank Condition	Stream Order	Riparian Land Type	Channel Sinuosity	Stream Slope	Rosgen Level 1 Channel	Channel Confinement	COMMENTS / DISTURBANCE
Jim Cr	Jim10	Lake	PC	PFOR	N	N		1700	25	0.0	0	WET	NAT	0.5	150	MC/D	NAT	3	MS5A	1.15	0.81	C	U	Riparian Meadow-RLF; Sinuosity & Slope Averaged
Jim Cr	Jim11	Lake	USFS	NFOR	N	Y		550	25	0.2	300	MC/D	NAT	0.2	300	MC/D	NAT	3	NL1E	1.06	5.63	A	U	Riparian Meadows / Mosaic
Jim Cr	Jim12	Lake	USFS	NFOR	N	N		1750	25	0.7	300	MC	NAT	0.7	300	MC	NAT	3	NL2A	1.03	6.52	A	M	
Jim Cr	Jim13	Lake	USFS	NFOR	N	N		750	20	0.7	150	MC	NAT	0.7	300	MC	NAT	3	NL2A	1.04	7.66	A	M	CC w/ Buffer-RLF
Jim Cr	Jim14	Lake	USFS	NFOR	N	N		2475	20	0.7	300	MC	NAT	0.7	300	MC	NAT	3	SL2A	1.02	5.85	A	M	Sinuosity & Slope Averaged
Jim Cr	Jim15	Msla	PC	PFOR	N	Y		3225	15	0.6	150	MC	NAT	0.3	50	MC	NAT	3	SL2A	1.09	6.20	A	M	CC's Both Sides w/ Narrow Buffers; Sinuosity & Slope Averaged
Jim Cr	Jim16	Msla	PC	PFOR	N	Y		1600	15	0.6	50	MC	NAT	0.5	50	MC	NAT	3	SL2A	1.03	9.81	A	C	CCs RLF/RRT; Thin Buffer; Sinuosity & Slope Averaged
Jim Cr	Jim17	Msla	PC	PFOR	N	N		1000	15	0.7	100	MC	NAT	0.7	100	MC	NAT	3	SL2A	1.01	5.90	A	C	CC's w/ Buffers
Jim Cr	Jim18	Msla	USFS	NFOR	Y	N		2950	15	0.8	300	MC	NAT	0.8	300	MC	NAT	3	SL2A	1.02	8.27	A	C	Intact Forest Stand; Sinuosity & Slope Averaged
Jim Cr	Jim19	Msla	USFS	NFOR	Y	N		950	15	0.8	300	MC	NAT	0.8	300	MC	NAT	3	MS4A	1.01	20.42	Aa	C	Steeps / Cataract; Change in Gradient
Jim Cr	Jim20	Msla	USFS	NFOR	Y	N		1025	15	0.5	300	WET	NAT	0.5	300	WET	NAT	3	SL5A	1.14	0.40	C	M	Riparian Meadow / Mosaic; Sinuosity & Slope Averaged
Jim Cr	Jim21	Msla	USFS	NFOR	Y	N		375	15	0.7	300	MC	NAT	0.7	300	MC	NAT	3	MS4A	1.10	15.61	Aa	C	Steeps / Cataract; Change in Gradient
Jim Cr	Jim22	Msla	PC	PFOR	Y	Y		3975	15	0.2	50	MC	BR	0.2	50	MC	BR	3	NL2A	1.14	2.43	B	M	Riparian Harvest; Possible Bank Erosion / Sediment Accumulation; Sinuosity & Slope Averaged
Jim Cr	Jim23	Msla	PC	PFOR	Y	N		675	15	0.2	100	MC	NAT	0.1	50	MC	NAT	3	MS3A	1.00	29.82	Aa	C	Steeps / Cataract; CC; Rip Harvests
Jim Cr	Jim24	Msla	PC	PFOR	Y	N		2575	25	0.2	100	MC	BR	0.2	100	MC	BR	3	SL2A	1.07	7.54	A	C	Riparian Harvests; Old Ghost Roads; Channel Widening?
Jim Cr	Jim25	Msla	PC	PFOR	Y	Y		2525	40	0.1	25	MC	BR	0.1	25	MC	BR	3	SL2A	1.05	0.95	C	C	Riparian Harvest; Non-FPA Buffer; Blown Channel; Sinuosity & Slope Averaged

Table A1. 2001 Stream Channel and Riparian Condition Reach Assessment Data

Stream Name	Reach Name	County	Owner	Land Use	Grizzly Bear Linkage	Impervious Surface	Riparian Structures	Reach Length (ft)	Active Channel (ft)	LB Canopy Density	LB Buffer (ft)	LB Vegetation	LB Bank Condition	RB Canopy Density	RB Buffer (ft)	RB Vegetation	RB Bank Condition	Stream Order	Riparian Land Type	Channel Sinuosity	Stream Slope	Rosgen Level 1 Channel	Channel Confinement	COMMENTS / DISTURBANCE
Jim Cr	Jim26	Msla	PC	PFOR	Y	N		900	400	0.1	50	MC	NAT	0.1	50	MC	NAT	3	NL1E	N/A	0.00		U	Unnamed Lake - CC w/ Minimal Buffer
Jim Cr	Jim27	Msla	PC	PFOR	Y	N		625	20	0.1	50	MC	BR	0.2	100	MC/D	BR	3	SL2A	1.12	0.06	C	M	Channel Bottom Influenced by fluctuating Lake Elevation
Jim Cr	Jim28	Msla	PC	PFOR	Y	N		500	15	0.3	50	MC	NAT	0.4	100	MC/D	NAT	3	SL2A	1.30	2.11	B	C	Harvests and Ghost Roads
Jim Cr	Jim29	Msla	PC	PFOR	Y	Y		1225	1300	0.6	200	MC	NAT	0.2	50	MC	NAT	3	NL1E	N/A	0.00		U	Jim Lake- Clear Cut & Roaded; Delta
Jim Cr	Jim30	Msla	PC	PFOR	Y	N		1150	40	0.0	0	HB	BR	0.1	25	WDY	BR	3	SL5A	1.30	2.11	B	C	No Buffer; Clear Cut; Blown Channel-Lake Delta
Jim Cr	Jim31	Msla	USFS	NFOR	Y	N		1625	20	0.2	25	MC	NAT	0.5	300	MC	NAT	3	SL5A	1.30	2.11	B	C	N-Side-Riparian Harvest on PCT Parcel

Piper Cr	Pip1	Lake	USFS	NFOR	Y	N		800	25	0.4	300	MC	NAT	0.3	300	MC	NAT	3	FL2D	1.02	0.54	C	M	Riparian Mosaic (Tree / Meadow)
Piper Cr	Pip1.1	Lake	USFS	NFOR	Y	N		375	25	0.4	300	MC	NAT	0.3	300	MC	NAT	3	NL2A	1.02	0.54	C	M	Riparian Mosaic (Tree / Meadow)
Piper Cr	Pip2	Lake	PVT	NR	Y	Y	5	2450	25	0.4	300	MC/D	NAT	0.2	25	MC/D	BR	3	NL2A	1.12	2.12	B	M	Road Crossing; RRT Developed; Minimal Veg; Slope Averaged
Piper Cr	Pip3	Lake	PVT	NR	Y	Y	8	900	25	0.5	300	MC/D	NAT	0.4	300	MC/D	NAT	3	NL2A	1.12	2.12	B	M	Developed RRT; Better Veg; Slope Averaged
Piper Cr	Pip4	Lake	USFS	NFOR	Y	N		575	25	0.5	300	MC	NAT	0.5	300	MC	NAT	3	NL2A	1.12	2.77	B	M	Harvested w/ Buffer
Piper Cr	Pip5	Lake	USFS	NFOR	Y	Y		1925	25	0.5	150	MC	NAT	0.5	150	MC	NAT	3	NL2A	1.01	2.80	B	M	Road Crossing; Harvest w/ Minimal Buffer; Sinuosity & Slope Averaged
Piper Cr	Pip6	Lake	USFS	NFOR	Y	N		1100	25	0.7	300	MC	NAT	0.7	300	MC	NAT	3	NL2A	1.01	5.87	A	M	
Piper Cr	Pip7	Lake	PC	PFOR	Y	N		2875	25	0.4	25	MC	NAT	0.6	200	MC	NAT	3	SL2A	1.02	5.74	A	M	CC Beyond Buffer; Sinuosity & Slope Averaged
Piper Cr	Pip8	Lake	USFS	NFOR	Y	N		1575	30	0.7	150	MC	NAT	0.8	300	MC	NAT	3	SL2A	1.01	6.59	A	M	CC Beyond Buffer

Table A1. 2001 Stream Channel and Riparian Condition Reach Assessment Data

Stream Name	Reach Name	County	Owner	Land Use	Grizzly Bear Linkage	Impervious Surface	Riparian Structures	Reach Length (ft)	Active Channel (ft)	LB Canopy Density	LB Buffer (ft)	LB Vegetation	LB Bank Condition	RB Canopy Density	RB Buffer (ft)	RB Vegetation	RB Bank Condition	Stream Order	Riparian Land Type	Channel Sinuosity	Stream Slope	Rosgen Level 1 Channel	Channel Confinement	COMMENTS / DISTURBANCE
Piper Cr	Pip9	Lake	USFS	NFOR	Y	N		725	30	0.8	300	MC	NAT	0.8	300	MC	NAT	3	SL2A	1.17	4.15	A	M	CC Just u/s on PCTC Parcel
Piper Cr	Pip10	Lake	PC	PFOR	Y	N		1575	40	0.5	100	MC/D	NAT	0.2	25	MC/D	BR	3	MS5A	1.13	2.93	B	M	FPA Buffer; Mass Failure-Left Slope; Sinuosity & Slope Averaged
Piper Cr	Pip11	Lake	USFS	NFOR	Y	N		3175	40	0.7	300	MC	NAT	0.7	300	MC	NAT	3	MS5A	1.06	0.67	C	M	Riparian Mosaics; Sinuosity & Slope Averaged
Piper Cr	Pip11.1	Lake	PC	PFOR	Y	N		1950	25	0.3	50	MC	NAT	0.8	300	MC	NAT	3	MS5A	1.02	7.10	A	C	CC N-Side; Buffer S-Side; Sinuosity & Slope Averaged
Piper Cr	Pip12	Lake	PC	PFOR	Y	N		1950	25	0.3	50	MC	NAT	0.8	300	MC	NAT	3	SL3B	1.02	7.10	A	C	CC N-Side; Buffer S-Side; Sinuosity & Slope Averaged
Piper Cr	Pip13	Lake	PC	PFOR	Y	Y		1125	20	0.3	50	MC	NAT	0.7	300	MC	NAT	2	SL3B	1.06	9.76	A	C	CC N-Side; Buffer w/ Road S-Side; Sinuosity & Slope Averaged
Piper Cr	Pip14	Lake	PC	PFOR	Y	N		1375	20	0.6	300	MC	NAT	0.6	300	MC	NAT	2	MS5A	1.02	5.17	A	U	Good Riparian Stand
Piper Cr	Pip15	Lake	PC	PFOR	Y	Y		3225	20	0.3	100	MC	NAT	0.6	50	MC	NAT	2	MS5A	1.08	7.09	A	C	FPA Buffers w/ Harvests; Road S-Side; Sinuosity & Slope Averaged
Piper Cr	Pip15.1	Lake	USFS	NFOR	Y	N		1275	15	0.7	300	MC	NAT	0.8	300	MC	NAT	2	MS5A	1.04	7.99	A	C	No Intrusive Management; Sinuosity & Slope Averaged
Piper Cr	Pip16	Lake	USFS	NFOR	Y	N		2925	15	0.7	300	MC	NAT	0.8	300	MC	NAT	2	SL2A	1.04	7.99	A	C	No Intrusive Management; End @ Wilderness; Sinuosity & Slope Averaged

Swan River	Swn1	Lake	FWS	CONS.	N	N		9550	350			WET	NAT			WET	NAT		NL1E	1.06	0.41	C	U	Refuge
Swan River	Swn2	Lake	Dual	MIX	N	N		1425	350			WET	NAT			MC	NAT		NL1E	1.19	0.29	C	U	RLF-Refuge; RRT Private
Swan River	Swn3	Lake	Dual	MIX	N	N		2225	350			WET	NAT			MC	NAT		NL1E	1.19	0.29	C	U	RLF-Private; RRT Refuge
Swan River	Swn4	Lake	PVT	NR	N	N		1200	300	0.6	300	MC	NAT	0.4	300	MC	NAT		FL1C	1.13	0.09	C	U	
Swan River	Swn5	Lake	USFS	NFOR	N	N		2425	300	0.4	300	MC/D	NAT	0.4	300	MC/D	NAT		FL1C	1.13	0.09	C	U	Mosaic of Meadow & Conifer Stands

Table A1. 2001 Stream Channel and Riparian Condition Reach Assessment Data

Stream Name	Reach Name	County	Owner	Land Use	Grizzly Bear Linkage	Impervious Surface	Riparian Structures	Reach Length (ft)	Active Channel (ft)	LB Canopy Density	LB Buffer (ft)	LB Vegetation	LB Bank Condition	RB Canopy Density	RB Buffer (ft)	RB Vegetation	RB Bank Condition	Stream Order	Riparian Land Type	Channel Sinuosity	Stream Slope	Rosgen Level 1 Channel	Channel Confinement	COMMENTS / DISTURBANCE
Swan River	Swn6	Lake	Dual	MIX	N	N		1525	300	0.3	250	MC/D	NAT	0.4	250	MC/D	NAT		FL1C	1.13	0.09	C	U	RLF Private; RRT Refuge
Swan River	Swn7	Lake	USFS	NFOR	N	N		3675	300	0.6	300	MC/D	NAT	0.6	300	MC/D	NAT		FL1C	1.13	0.09	C	U	Large Meander Bends; Point Bars
Swan River	Swn8	Lake	PVT	NR	N	Y		1100	300	0.2	300	MC/D	NAT	0.3	300	MC/D	NAT		FL1C	1.13	0.09	C	U	Bridge Crossing; River Access; Gildart Cr Confluence
Swan River	Swn9	Lake	PVT	NR	N	N		1675	300	0.2	300	MC/D	NAT	0.5	300	MC/D	NAT		FL1C	1.11	0.40	C	U	
Swan River	Swn10	Lake	PVT-C	CONS.	N	N		1400	250		200	HB	NAT	0.1	250	MC	NAT		FL1C	1.11	0.40	C	U	RLF-HB Veg w/ Conifer Beyond; RRT Mosaic
Swan River	Swn11	Lake	USFS	NFOR	N	N		10250	250	0.4	300	MC	NAT	0.4	300	MC	NAT		FL1C	1.16	0.82	Da	U	Old Harvest Units?; Lost Cr. Confluence
Swan River	Swn12	Lake	USFS	NFOR	N	Y		4575	250		300	WET	NAT		300	MC	NAT		FL1C	1.08	0.15	C	U	Picnic Area RRT
Swan River	Swn13	Lake	PVT	NR	N	Y		1275	250	0.5	300	MC/D	NAT	0.7	100	MC	NAT		FL1C	1.08	0.16	C	U	Private Access Road-RRT; Wetland Behind Buffer-RRT
Swan River	Swn14	Lake	USFS	NFOR	N	N		3900	300	0.4	300	MC/D	NAT	0.5	150	MC/D	NAT		FL1C	1.08	0.16	C	U	Forest / Wetland Mosaics
Swan River	Swn15	Lake	USFS	NFOR	N	N		1875	300	0.6	300	MC/D	NAT	0.6	300	MC/D	NAT		FL2D	1.08	0.16	C	U	
Swan River	Swn16	Lake	DNRC	SFOR	N	N		1350	300	0.6	300	MC/D	NAT	0.6	300	MC/D	NAT		FL2D	1.08	0.16	D	U	
Swan River	Swn17	Lake	USFS	NFOR	N	N		1225	300	0.4	300	MC/D	NAT	0.6	300	MC/D	NAT		FL2D	1.28	0.30	D	U	
Swan River	Swn18	Lake	PVT	RS	N	Y	1	1850	300	0.3	150	MC/D	NAT	0.2	100	MC	NAT		FL2D	1.28	0.30	C	U	RLF-Point Bar; RRT Airstrip
Swan River	Swn19	Lake	USFS	NFOR	N	N		2575	300	0.6	300	MC	NAT	0.3	300	MC/D	NAT		FL2D	1.15	0.05	Da	U	
Swan River	Swn20	Lake	Dual	MIX	N	N		800	600	0.7	300	MC	NAT	0.3	50	MC	BR		FL2D	1.18	0.05	Da	U	RLF-FNF; RRT-PVT; Eroding Bank
Swan River	Swn21	Lake	USFS	NFOR	N	N		1525	300	0.7	300	MC	NAT	0.7	300	MC	NAT		FL2D	1.08	1.32	Da	U	Channel Disturbance Zone ≈ 1600 ft

Table A1. 2001 Stream Channel and Riparian Condition Reach Assessment Data

Stream Name	Reach Name	County	Owner	Land Use	Grizzly Bear Linkage	Impervious Surface	Riparian Structures	Reach Length (ft)	Active Channel (ft)	LB Canopy Density	LB Buffer (ft)	LB Vegetation	LB Bank Condition	RB Canopy Density	RB Buffer (ft)	RB Vegetation	RB Bank Condition	Stream Order	Riparian Land Type	Channel Sinuosity	Stream Slope	Rosgen Level 1 Channel	Channel Confinement	COMMENTS / DISTURBANCE
Swan River	Swn22	Lake	DNRC	SFOR	Y	N		4825	300	0.5	300	MC	NAT	0.6	300	MC	NAT		FL2D	1.17	0.49	C	U	RRT-Forest / Wetland Mosaic
Swan River	Swn23	Lake	DNRC	SFOR	Y	Y		4425	300			MC/D	NAT			MC/D	NAT		FL2D	1.17	0.49	Da	U	Forest / Wetland Mosaic
Swan River	Swn24	Lake	DNRC	SFOR	Y	N		725	200	0.6	150	MC/D	NAT				BR		FL2D	1.17	0.49	C	U	RRT-Steep, Bare Cut Bank
Swan River	Swn25	Lake	DNRC	SFOR	Y	N		4925	250			MC/D	NAT			MC/D	NAT		FL2D	1.16	0.32	Da	U	Forest / Wetland Mosaic
Swan River	Swn26	Lake	PC	PFOR	Y	N		1000	250			MC/D	NAT			MC/D	NAT		FL2D	1.02	1.03	Da	U	Forest / Wetland Mosaic
Swan River	Swn27	Lake	DNRC	SFOR	Y	N		6500	250			MC/D	NAT			MC/D	NAT		FL2D	1.08	0.49	Da	U	Forest / Wetland Mosaic
Swan River	Swn28	Lake	PC1	PFOR	Y	N		5200	250			MC/D	NAT			MC/D	NAT		FL2D	1.20	0.43	Da	U	Forest / Wetland Mosaic; Woodward Cr. Confluence
Swan River	Swn29	Lake	PC1	PFOR	Y	N		1025	25			MC/D	NAT			MC/D	NAT		FL2D	1.14	0.28	Da	U	
Swan River	Swn30	Lake	DNRC	SFOR	Y	N		2550	250			MC/D	NAT			HB	BR		FL2D	1.14	0.28	Da	U	RRT-Few Conifers; Bare, Vertical Bank
Swan River	Swn31	Lake	PC1	PFOR	Y	N		4425	300			MC/D	NAT			MC/D	NAT		FL2D	1.08	0.66	Da	U	Forest / Meadow Mosaic
Swan River	Swn32	Lake	DNRC	SFOR	N	N		825	250	0.3	300	MC/D	NAT	0.6	100	MC/D	NAT		FL2D	1.03	1.40	C	U	Forest / Meadow Mosaic
Swan River	Swn33	Lake	DNRC	SFOR	N	N		1475	250	0.2	200	MC/D	NAT	0.1	100	MC/D	NAT		FL2D	1.01	0.05	C	U	RRT-SRSF HQ
Swan River	Swn34	Lake	DNRC	SFOR	N	N		1750	250	0.3	300	MC/D	NAT	0.6	300	MC/D	NAT		FL2D	1.25	0.98	C	U	RRT-SRSF HQ
Swan River	Swn35	Lake	DNRC	SFOR	N	N		1700	200	0.5	300	MC/D	NAT	0.5	250	MC	NAT		FL2D	1.48	0.98	C	U	RRT-SRSF HQ
Swan River	Swn36	Lake	DNRC	SFOR	N	Y		1475	200	0.5	300	MC	NAT	0.4	100	MC/D	NAT		FL2D	1.01	0.53	C	U	RLF-Campground; River Access; Bridge Crossing
Swan River	Swn37	Lake	PVT	NR	N	N		1350	200	0.5	50	MC	NAT	0.6	50	MC	NAT		FL2D	1.01	0.53	C	U	RRT-Homesite Development within 1000'

Table A1. 2001 Stream Channel and Riparian Condition Reach Assessment Data

Stream Name	Reach Name	County	Owner	Land Use	Grizzly Bear Linkage	Impervious Surface	Riparian Structures	Reach Length (ft)	Active Channel (ft)	LB Canopy Density	LB Buffer (ft)	LB Vegetation	LB Bank Condition	RB Canopy Density	RB Buffer (ft)	RB Vegetation	RB Bank Condition	Stream Order	Riparian Land Type	Channel Sinuosity	Stream Slope	Rosgen Level 1 Channel	Channel Confinement	COMMENTS / DISTURBANCE
Swan River	Swn38	Lake	USFS	NFOR	N	N		575	200	0.2	100	MC	BR	0.8	300	MC	NAT		FL2D	1.23	0.37	C	U	RLF-Narrow Buffer; Large Meadow
Swan River	Swn39	Lake	PVT	NR	N	N		1375	200	0.7	300	MC/D	NAT	0.8	300	MC	NAT		FL2D	1.23	0.37	C	U	Large River Bend / Point Bar
Swan River	Swn40	Lake	USFS	NFOR	N	N		1800	200	0.6	100	MC/D	NAT	0.6	300	MC	BR		FL2D	1.23	0.37	C	U	Channel Migration Toward RRT
Swan River	Swn41	Lake	Dual	MIX	N	N	4	600	200			HB	BR	0.4	300	MC	NAT		FL2D	1.23	0.37	Da	U	RLF-PVT; Meadow / Homesite; RRT-FNF
Swan River	Swn42	Lake	USFS	NFOR	N	N		1300	250		200	WDY	BR	0.5	300	MC	NAT		FL2D	1.23	0.37	C	U	
Swan River	Swn43	Lake	DNRC	SFOR	N	N		1300	200	0.6	300	MC	NAT	0.7	300	MC	NAT		FL2D	1.23	0.37	C	U	
Swan River	Swn44	Lake	PVT	NR	N	N	4	825	200		50	HB	NAT	0.7	300	MC	NAT		FL2D	1.23	0.37	D	U	RLF; Bank Veg herbaceous but Appears Intact
Swan River	Swn45	Lake	DNRC	SFOR	N	N		4300	200	0.4	300	MC/D	NAT	0.7	300	MC/D	NAT		FL2D	1.08	0.38	C	U	
Swan River	Swn46	Lake	PVT	NR	N	Y	11	2925	200	0.3	300	MC/D	NAT	0.3	300	MC	NAT		FL2D	1.12	0.34	C	U	RRT-Development; RLF - 2 Structures
Swan River	Swn47	Lake	PVT	NR	N	Y		1075	200	0.8	300	MC	NAT	0.5	300	MC/D	NAT		FL2D	1.12	0.30	C	U	RLF-Second Growth Forest
Swan River	Swn48	Lake	PVT	NR	N	N		1225	200	0.6	150	MC/D	NAT	0.5	300	MC/D	NAT		FL2D	1.12	0.30	C	U	RLF-Forest / Wetland Mosaic
Swan River	Swn49	Lake	PVT	NR	N	N	4	1325	250	0.5	100	MC/D	NAT	0.2	100	MC	BR		FL2D	1.12	0.30	C	U	RRT-Structures Near Unprotected Bank
Swan River	Swn50	Lake	DNRC	SFOR	N	N		1100	200	0.8	300	MC	NAT				BR		FL2D	1.12	0.30	C	U	RRT-Steep Eroding Cutbank (Outside Bend)
Swan River	Swn51	Lake	PVT	NR	N	N		1050	250				BR				BR		FL2D	1.12	0.30	Da	U	Forested / Wetland Anastomosed Area; Cut Banks
Swan River	Swn52	Lake	PC	PFOR	N	N		3700	250				BR				BR		FL2D	1.12	0.30	Da	U	Forested / Wetland Anastomosed Area; Cut Banks
Swan River	Swn53	Lake	PVT	NR	Y	N	3	3025	250				BR	0.2	300	MC/D	NAT		FL2D	1.12	0.30	C	U	RLF-Ranch Houses; Exposed Banks?

Table A1. 2001 Stream Channel and Riparian Condition Reach Assessment Data

Stream Name	Reach Name	County	Owner	Land Use	Grizzly Bear Linkage	Impervious Surface	Riparian Structures	Reach Length (ft)	Active Channel (ft)	LB Canopy Density	LB Buffer (ft)	LB Vegetation	LB Bank Condition	RB Canopy Density	RB Buffer (ft)	RB Vegetation	RB Bank Condition	Stream Order	Riparian Land Type	Channel Sinuosity	Stream Slope	Rosgen Level 1 Channel	Channel Confinement	COMMENTS / DISTURBANCE
Swan River	Swn54	Lake	PC1	PFOR	Y	N		1875	200	0.4	300	MC/D	NAT	0.3	300	MC/D	NAT		FL2D	1.12	0.30	C	U	
Swan River	Swn55	Lake	PVT	PFOR	Y	N		1550	200	0.3	100	MC/D	NAT	0.7	300	MC	BR		FL2D	1.11	0.38	C	U	RLF - Vegetating Point Bar; RRT – second Growth
Swan River	Swn56	Lake	Dual	MIX	Y	N		1175	200	0.7	100	MC/D	NAT	0.6	300	MC/D	NAT		FL2D	1.05	0.90	C	U	RRT: FNF; RLF: PCTC, Post '97 Harvest, Reduced Buffer Width & Destiny?
Swan River	Swn57	Lake	USFS	NFOR	Y	N		675	200	0.7	300	MC/D	NAT	0.7	300	MC/D	NAT		FL2D	1.04	0.73	C	U	Piper Cr. Confluence
Swan River	Swn58	Lake	USFS	NFOR	Y	N		1925	200	0.7	250	MC/D	NAT	0.7	300	MC/D	NAT		FL2D	1.13	0.40	C	U	Bridge Crossing
Swan River	Swn59	Lake	PC	PFOR	Y	N		850	275	0.3	300	MC/D	BR	0.2	300	MC/D	NAT		FL2D	1.13	0.40	C	U	Thin Buffer; Riparian Harvest?: Post '97 Harvests
Swan River	Swn60	Lake	PC	PFOR	Y	N		700	275	0.0			BR	0.3	300	MC/D	NAT		FL2D	1.13	0.40	C	U	Riparian Harvest: RLF; Post '97 Harvests
Swan River	Swn61	Lake	PC	PFOR	Y	Y		1650	275	0.6	300	MC	NAT	0.4	300	MC/D	NAT		FL2D	1.13	0.40	Da	U	High Flow Side Channel; Channel Bars; Post '97 Harvests
Swan River	Swn62	Lake	PC	PFOR	Y	N		4050	275	0.5	300	MC	NAT	0.1	100	MC	NAT		FL2D	1.13	0.40	C	U	Riparian Harvest: RRT; Post '97 Harvest
Swan River	Swn63	Lake	PC	PFOR	Y	N		850	300	0.3	200	MC	NAT	0.3	200	MC	NAT		FL1C	1.07	0.67	Da	U	New Channel (Post 1990); Distance is New Channel Est.
Swan River	Swn64	Lake	PVT	RS	N	N		1475	300	0.0		HB	BR	0.3	300	MC/D	NAT		FL1C	1.07	0.67	C	U	Field w/ High Flow Channel: RRT
Swan River	Swn65	Lake	PVT	RS	N	N		1025	300	0.1	50	MC/D	BR	0.0			BR		FL2D	1.07	0.67	C	U	Bare Cut Bank: RRT
Swan River	Swn66	Lake	PVT	RS	N	N		1900	325	0.0		HB	NAT	0.3	150	MC	NAT		FL2D	1.21	0.08	Da	U	Large Channel Island & Migration Zone
Swan River	Swn67	Lake	PVT	RS	N	N		475	325	0.0		WDY	NAT	0.0			BR		FL2D	1.09	0.49	Da	U	Bare Cut Bank: RRT; Channel Bars; Jim Cr.
Swan River	Swn68	Lake	PVT	RS	N	N		1900	325	0.2	300	MD/C	BR	0.2	300	MD/C	BR		FL2D	1.09	0.49	Da	U	Large Channel Bars, Shifting Channel
Swan River	Swn69	Lake	PVT	NR	N	N		3050	350	0.3	300	MD/C	BR	0.4	300	MD/C	BR		FL2D	1.13	0.41	Da	U	Large Channel Bars, Shifting Channel

Table A1. 2001 Stream Channel and Riparian Condition Reach Assessment Data

Stream Name	Reach Name	County	Owner	Land Use	Grizzly Bear Linkage	Impervious Surface	Riparian Structures	Reach Length (ft)	Active Channel (ft)	LB Canopy Density	LB Buffer (ft)	LB Vegetation	LB Bank Condition	RB Canopy Density	RB Buffer (ft)	RB Vegetation	RB Bank Condition	Stream Order	Riparian Land Type	Channel Sinuosity	Stream Slope	Rosgen Level 1 Channel	Channel Confinement	COMMENTS / DISTURBANCE
Swan River	Swn70	Lake	PVT	RS	N	N	1	1750	325	0.0	300	HB	BR	0.4	300	MD/C	NAT		FL2D	1.17	0.32	C	U	Meadow/ Field RLF; Post '97 Harvest-RRT
Swan River	Swn71	Lake	PVT	NR	N	N	3	650	275	0.7	300	MD/C	BR	0.5	300	MC	BR		FL2D	1.17	0.32	C	U	Bare Banks; Salmon Prairie, Post '97 Harvest?-RLF
Swan River	Swn72	Lake	PVT	RS	N	Y	2	1200	300	0.1	20	MC	BR	0.4	300	MC/D	NAT		FL2D	1.17	0.32	C	U	Bare Outside Bend w/ Farm Road On Top
Swan River	Swn73	Lake	PVT	NR	N	Y	6	1225	300	0.3	300	MC	BR	0.0			BR		FL2D	1.03	0.93	C	U	Riparian Roads/ Structures; Steep, Bare Banks?
Swan River	Swn74	Lake	PVT	NR	N	N	1	1075	300	0.5	300	MC	BR	0.3	100	MC	NAT		FL2D	1.05	0.96	C	U	Large Outside Cut Bank-Vegetated
Swan River	Swn75	Lake	PVT	NR	N	N		700	225	0.0			BR	0.7	300	MC/D	NAT		FL2D	1.05	0.96	C	U	Bare Cut Bank: RLF
Swan River	Swn76	Lake	PVT	NR	N	N		2550	225	0.4	300	MC/D	NAT	0.5	300	MC/D	NAT		FL2D	1.08	1.19	C	U	Riparian Harvests/ Thinning
Swan River	Swn77	Lake	USFS	NFOR	Y	N		1225	225	0.2	300	MC	NAT	0.7	300	MC	BR		FL2D	1.08	1.49	C	U	Bare Cut Bank: RRT
Swan River	Swn78	Lake	USFS	NFOR	Y	N		750	275	0.8	300	MC	NAT	0.8	300	MC	NAT		FL2D	1.08	1.49	C	U	Vegetated Point Bar and Outside Bank
Swan River	Swn79	Lake	USFS	NFOR	Y	N		950	300	0.8	300	MC	NAT	0.1	300	MC	NAT		FL2D	1.16	0.15	C	U	Riparian Meadow
Swan River	Swn80	Lake	USFS	NFOR	Y	N		350	300	0.8	300	MC	NAT	0.1	300	MC	NAT		FL2D	1.11	1.15	C	U	Large Meander Bend w/ High Flow Channels
Swan River	Swn81	Lake	PVT	NR	Y	N		700	300	0.1	300	MC	BR	0.0		WDY	BR		FL2D	1.11	1.15	C	U	Large Meander Bend w/ High Flow Channels
Swan River	Swn82	Lake	PVT	NR	Y	N		925	250	0.6	150	MC	BR	0.6	300	MC	NAT		FL2D	1.11	1.15	Da	U	Partially Vegetated Point Bar; High Flow Channel
Swan River	Swn83	Lake	PVT	NR	Y	N		2050	250	0.1	300	MC/D	NAT	0.1	300	MC/D	NAT		FL2D	1.13	0.67	Da	U	New Primary Channel (Post 1990)
Swan River	Swn84	Lake	PC1	PFOR	Y	N		2100	150	0.1	100	MC/D	NAT	0.0	300	WDY	NAT		FL2D	1.13	0.67	Da	U	Riparian Mosaic
Swan River	Swn85	Lake	PC1	PFOR	Y	N		925	150	0.6	100	MC	NAT	0.3	300	MC/D	NAT		FL2D	1.13	0.67	Da	U	Riparian Mosaic

Table A1. 2001 Stream Channel and Riparian Condition Reach Assessment Data

Stream Name	Reach Name	County	Owner	Land Use	Grizzly Bear Linkage	Impervious Surface	Riparian Structures	Reach Length (ft)	Active Channel (ft)	LB Canopy Density	LB Buffer (ft)	LB Vegetation	LB Bank Condition	RB Canopy Density	RB Buffer (ft)	RB Vegetation	RB Bank Condition	Stream Order	Riparian Land Type	Channel Sinuosity	Stream Slope	Rosgen Level 1 Channel	Channel Confinement	COMMENTS / DISTURBANCE
Swan River	Swn86	Msla	PVT	RS	Y	N	8	2150	100	0.0		WET	NAT	0.1	300	MC	NAT		FL2D	1.13	0.67	Da	U	Wetland: RLF; Riparian Harvest: RRT
Swan River	Swn87	Msla	PVT	NR	Y	N		1775	200	0.0		WET	NAT	0.0		WET	NAT		FL2D	1.13	0.67	C	U	Wetland Characteristics
Swan River	Swn88	Msla	PVT	NR	Y	N		1525	200	0.1	50	MC/D	BR	0.3	50	MD/C	NAT		FL2D	1.16	0.17	Da	U	Cut Bank: RLF
Swan River	Swn89	Msla	PVT	RS	N	N		1825	225	0.0		HB	NAT	0.0	100	WDY	NAT		FL2D	1.18	0.48	Da	U	Meadow: RLF
Swan River	Swn90	Msla	PVT	NR	N	N		1075	225	0.2	100	MC/D	NAT	0.0	300	WDY	NAT		FL2D	1.13	0.53	Da	U	Large Channel Bars; Multi-thread Channel
Swan River	Swn91	Msla	PC1	PFOR	N	Y		1475	475	0.5	300	MC	NAT	0.4	300	MC/D	BR		FL2D	1.13	0.53	D	U	Bridge crossing; Large Channel Bars!
Swan River	Swn92	Msla	PC1	PFOR	N	N		1725	250	0.2	300	MC/D	NAT	0.2	150	MD/C	BR		FL2D	1.13	0.53	Da	U	New Primary Channel; Large Exposed Bars/ Banks: RRT
Swan River	Swn93	Msla	PC1	PFOR	N	N		1975	250	0.2	300	MC/D	NAT	0.4	300	MD/C	BR		FL2D	1.13	0.53	Da	U	New Primary Channel
Swan River	Swn94	Msla	PVT	NR	N	Y		1550	300	0.4	300	WDY	BR	0.6	150	WDY	BR		FL2D	1.13	0.53	Da	U	Hwy 83 RRT, Large Channel Bars
Swan River	Swn95	Msla	PVT	NR	N	N		1775	200	0.3	300	MC	BR	0.3	300	MD	BR		FL2D	1.13	0.53	Da	U	Large Channel Bars; Migration zone
Swan River	Swn96	Msla	PC1	PFOR	Y	N		3500	300	0.2	50	MC	BR	0.2	300	MC	BR		FL2D	1.13	0.53	D	U	Riparian Harvests
Swan River	Swn97	Msla	Dual	MIX	Y	N		1000	300	0.3	300	MC	NAT	0.1	300	MC	NAT		FL2D	1.13	0.53	D	U	PC1-RRT; FNF-RLF; Lg Bars
Swan River	Swn98	Msla	PVT	PFOR	Y	N		1050	150	0.6	300	MC	NAT	0.2	300	MC/D	NAT		FL2D	1.15	0.12	C	U	Large Point Bars
Swan River	Swn99	Msla	Dual	MIX	Y	N		1300	200	0.6	300	MC	NAT	0.4	300	MC/D	NAT		FL2D	1.08	0.63	C	U	Large Point Bars
Swan River	Swn100	Msla	PVT	NR	Y	N		750	475	0.6	300	MC/D	NAT	0.3	200	MC/D	NAT		FL2D	1.18	0.59	Da	U	Large Channel Bars; Side Channel
Swan River	Swn101	Msla	USFS	NFOR	N	N		2550	300	0.6	300	MC/D	NAT	0.7	300	MC	NAT		FL2D	1.05	0.54	Da	U	Large Channel Bars; Side Channel

Table A1. 2001 Stream Channel and Riparian Condition Reach Assessment Data

Stream Name	Reach Name	County	Owner	Land Use	Grizzly Bear Linkage	Impervious Surface	Riparian Structures	Reach Length (ft)	Active Channel (ft)	LB Canopy Density	LB Buffer (ft)	LB Vegetation	LB Bank Condition	RB Canopy Density	RB Buffer (ft)	RB Vegetation	RB Bank Condition	Stream Order	Riparian Land Type	Channel Sinuosity	Stream Slope	Rosgen Level 1 Channel	Channel Confinement	COMMENTS / DISTURBANCE
Swan River	Swn102	Msla	PVT	RS	N	Y	2	1025	200	0.3	300	MC	NAT	0.6	300	MC	BR		FL2D	1.15	0.48	Da	U	Potential Riprap RRT
Swan River	Swn103	Msla	PC	PFOR	N	N		1225	225	0.1	300	MC	NAT	0.1	300	MC	NAT		FL2D	1.11	0.98	Da	U	Primary Channel Shift; Elk Cr. Confluence
Swan River	Swn104	Msla	PC	PFOR	N	N		3075	225	0.1	50	MC	BR	0.2	300	MC	NAT		FL2D	1.29	0.67	Da	U	Primary Channel Shift; Riparian Harvest-RLF
Swan River	Swn105	Msla	USFS	NFOR	N	N		3100	175	0.7	300	MC	NAT	0.1	300	MC	NAT		FL2D	1.29	0.67	Da	U	Primary Channel Shift; Post '97 Harvests-RLF
Swan River	Swn106	Msla	PVT	NR	N	N		2225	175	0.6	300	MD/C	NAT	0.1	300	MC/D	NAT		FL2D	1.05	0.85	Da	U	Riparian Mosaics
Swan River	Swn107	Msla	PVT	NR	N	Y	13	450	125		100	HB	NAT	0.4	300	MC	NAT		FL2D	1.06	0.31	C	U	Potential Riprap; Bridge Crossing
Swan River	Swn108	Msla	PVT	NR	N	N		600	125	0.6	300	MC	NAT	0.6	100	MC	NAT		FL2D	1.20	0.89	C	U	Potential Riprap on Bridge Abutement
Swan River	Swn109	Msla	PVT	NR	N	N		300	125		300	HB	BR	0.6	300	MC/D	NAT		FL2D	1.33	1.73	Da	U	Homesite/ Field-RLF; Channel Island-RRT
Swan River	Swn110	Msla	PVT	NR	N	N		475	125	0.3	300	MC	NAT	0.4	300	MC/D	NAT		FL2D	1.33	1.73	Da	U	Riparian Mosaic
Swan River	Swn111	Msla	PVT	NR	N	Y		1900	125	0.2	300	MC/D	NAT	0.7	200	MC	NAT		FL2D	1.33	1.73	Da	U	Hwy 83-RRT; Riparian Mosaic-RLF
Swan River	Swn112	Msla	PVT	NR	N	N	10	2825	125	0.2	300	MC/D	NAT	0.4	300	MC	NAT		FL2D	1.06	0.77	C	U	Residences-RRT; Riparian Mosaic-RLF
Swan River	Swn113	Msla	PVT	NR	N	N	1	5100	125	0.2	300	MC/D	NAT	0.2	300	MC/D	NAT		FL2D	1.21	1.40	C	U	Riparian Mosaic
Swan River	Swn114	Msla	PVT	NR	N	Y	3	525	125	0.3	300	MC/D	NAT	0.5	300	MC	NAT		FL2D	1.14	0.79	C	U	Bridge Crossing; Side Channel
Swan River	Swn115	Msla	PVT	NR	N	Y	5	975	125	0.4	300	MD/C	NAT	0.2	225	MC/D	BR		FL2D	1.14	0.79	C	U	Riparian Mosaic-RLF; Homesites-RRT
Swan River	Swn116	Msla	PVT	NR	N	N		1900	125	0.7	300	MC	NAT	0.7	300	MC/D	NAT		FL2D	1.02	1.31	C	U	Riparian Forest
Swan River	Swn117	Msla	PVT	PFOR	N	N		700	125	0.2	300	MC	NAT	0.7	250	MC	NAT		FL2D	1.01	0.90	C	U	Riparian Harvest-RLF; CC w/ Buffer- RRT

Table A1. 2001 Stream Channel and Riparian Condition Reach Assessment Data

Stream Name	Reach Name	County	Owner	Land Use	Grizzly Bear Linkage	Impervious Surface	Riparian Structures	Reach Length (ft)	Active Channel (ft)	LB Canopy Density	LB Buffer (ft)	LB Vegetation	LB Bank Condition	RB Canopy Density	RB Buffer (ft)	RB Vegetation	RB Bank Condition	Stream Order	Riparian Land Type	Channel Sinuosity	Stream Slope	Rosgen Level 1 Channel	Channel Confinement	COMMENTS / DISTURBANCE
Swan River	Swn118	Msla	PVT	RS	N	N		1400	125	0.1	300	MC	NAT	0.1	300	MC	NAT		FL2D	1.11	0.89	C	U	Floodplain; Buck Creek Alluvial Fan-RRT
Swan River	Swn119	Msla	PVT	PFOR	N	N		775	125	0.2	300	MC	NAT	0.7	100	MC	NAT		FL2D	1.15	0.65	C	U	Floodplain-RLF; CC w/ Thin Buffer-RLF
Swan River	Swn120	Msla	PVT	NR	N	N	1	3675	125	0.2	300	MC/D	NAT	0.5	300	MC/D	RR		FL2D	1.15	0.65	C	U	Residential DW on Floodplain; Bridge Crossing
Swan River	Swn121	Msla	PC	PFOR	N	N		1975	100	0.4	300	MC	NAT	0.2	300	MC/D	BR		FL2D	1.15	0.65	C	U	Riparian Mosaic
Swan River	Swn122	Msla	PC	PFOR	N	N		350	100	0.8	300	MC	BR	0.4	200	MC	NAT		FL2D	1.15	0.65	C	U	Riparian Mosaic-RRT; "Timber Stand" RLF
Swan River	Swn123	Msla	PC	PFOR	N	N		2350	100	0.6	300	MC/D	NAT	0.2	200	MC	BR		FL2D	1.15	0.65	Da	U	CC Slope-RRT
Swan River	Swn124	Msla	PC	PFOR	N	N		1275	125	0.6	300	MC/D	BR			HB	BR		FL2D	1.04	1.52	C	U	Cut Bank-RLF; Riparian Pasture-RRT
Swan River	Swn125	Msla	PVT	RS	N	N	1	600	125	0.8	300	MC	NAT	0.6	300	MC	NAT		FL2C	1.27	0.47	C	U	Farmstead/ Pastures-RRT; Forest-RLF
Swan River	Swn126	Msla	PVT	RS	N	N	1	700	100	0.8	300	MC	NAT	0.5	300	MC/D	BR		FL2C	1.27	0.47	C	U	Cut bank-RRT
Swan River	Swn127	Msla	PVT	RS	N	Y	2	1350	100	0.7	300	MC/D	NAT	0.4	300	MC/D	BR		FL2C	1.27	0.47	Da	M	Secondary Channel Against Road; Cut bank below
Swan River	Swn128	Msla	PVT	NR	N	N	2	2025	125	0.1	300	MD/C	BR	0.4	300	MC	NAT		FL2C	1.27	0.47	C	M	Riparian Mosaic; Cut Bank-RLF
Swan River	Swn129	Msla	PVT	NR	N	Y		1325	125	0.7	300	MC	NAT	0.7	300	MC	NAT		FL2C	1.27	0.47	C	M	Forested Riparian
Swan River	Swn130	Msla	PVT	NR	N	Y		975	125	0.8	300	MC	NAT	0.6	300	MC	NAT		FL1C	1.27	0.47	C	M	Bridge Crossing
Swan River	Swn131	Msla	PVT	NR	N	Y		925	125	0.6	300	MC	NAT		300	HB	RR		FL1C	1.27	0.47	C	U	Road-RRT; Potential Riprap Area
Swan River	Swn132	Msla	PVT	NR	N	N		3850	100		300	WET	NAT		300	WET	NAT		FL1C	1.30	0.25	E	U	Riparian Mosaic/ Wetland
Swan River	Swn133	Msla	PVT	NR	N	N		1100	100		300	WET	NAT	0.7	300	MC	NAT		FL1C	1.30	0.25	C	U	Forest-RRT; Wetland-RLF

Table A1. 2001 Stream Channel and Riparian Condition Reach Assessment Data

Stream Name	Reach Name	County	Owner	Land Use	Grizzly Bear Linkage	Impervious Surface	Riparian Structures	Reach Length (ft)	Active Channel (ft)	LB Canopy Density	LB Buffer (ft)	LB Vegetation	LB Bank Condition	RB Canopy Density	RB Buffer (ft)	RB Vegetation	RB Bank Condition	Stream Order	Riparian Land Type	Channel Sinuosity	Stream Slope	Rosgen Level 1 Channel	Channel Confinement	COMMENTS / DISTURBANCE
Swan River	Swn134	Msla	PVT	NR	N	N		3300	100	0.2	300	WET	NAT	0.4	300	MC	NAT		FL1C	1.26	0.37	E	U	Wetlands; Floodplain Activity-RRT
Swan River	Swn135	Msla	Dual	MIX	N	N		2175	100	0.3	150	MC	NAT	0.7	300	MC	NAT		FL1C	1.26	0.37	Da	U	FNF-RRT; Wetlands, PVT-RLF
Swan River	Swn136	Msla	PVT	RS	N	N		1475	100	0.2	300	MC/D	NAT	0.3	300	MC/D	NAT		FL1C	1.11	0.75	C	U	Riparian Harvests
Swan River	Swn137	Msla	PVT	NR	N	Y	1	1675	100	0.7	300	MC	NAT	0.7	300	MC	NAT		FL1C	1.13	0.87	C	U	Homesite; Bridge Crossing
Swan River	Swn138	Msla	USFS	NFOR	Y	N		1475	100	0.7	300	MC	NAT	0.7	300	MC	NAT		FL1C	1.15	0.99	C	M	One Small CC Impacting Buffer
Swan River	Swn138.1	Msla	USFS	NFOR	Y	N		1625	100	0.7	300	MC	NAT	0.7	300	MC	NAT		FL2C	1.15	0.99	C	M	Intact Riparian Forest
Swan River	Swn139	Msla	USFS	NFOR	Y	N		1225	100	0.8	300	MC	NAT	0.7	300	MC	NAT		FL2C	1.03	0.49	C	M	Harvests Beyond Buffers
Swan River	Swn140	Msla	USFS	NFOR	Y	N		1100	100	0.8	300	MC	NAT	0.4	175	MC	BR		FL2C	1.43	0.54	C	M	Cut Bank, Thin Buffer-RRT
Swan River	Swn141	Msla	USFS	NFOR	Y	Y		1325	100	0.7	300	MC	NAT	0.7	300	MC	NAT		FL2C	1.43	0.54	C	M	Bridge Crossing, River Access-RRT
Swan River	Swn142	Msla	USFS	NFOR	Y	N		1550	75		300	WET	NAT	0.7	300	MC	NAT		FL1C	1.43	0.54	E	U	Forest-RRT; Wetland Mix-RLF
Swan River	Swn143	Msla	USFS	NFOR	Y	N		1800	75		300	WET	NAT		300	WET	NAT		FL1C	1.45	0.67	E	U	Wetlands w/ Scattered MC
Swan River	Swn144	Msla	USFS	NFOR	Y	N		1450	75	0.4	200	MC	NAT	0.6	300	MC/D	NAT		FL1C	1.23	1.48	Da	U	Riparian Harvest-RLF
Swan River	Swn145	Msla	USFS	NFOR	Y	N		2400	75	0.7	300	MC	NAT	0.6	300	MC	NAT		FL1C	1.23	1.48	Da	U	Broad Floodplain Area; Multi-thread Channels
Swan River	Swn146	Msla	PVT	RS	Y	N		750	75	0.6	300	MC/D	NAT	0.8	300	MC	NAT		FL1C	1.05	0.38	Da	M	Intact Riparian
Swan River	Swn147	Msla	PVT	RS	Y	N	3	2200	50	0.7	300	MC/D	NAT	0.8	300	MC	NAT		FL1C	1.29	1.76	C	C	Intact Riparian
Swan River	Swn148	Msla	PVT	RS	Y	Y		3825	75	0.5	300	MC	NAT	0.8	175	MC	NAT		FL1C	1.28	2.62	B	M	CC Beyond Buffer-RRT

Table A1. 2001 Stream Channel and Riparian Condition Reach Assessment Data

Stream Name	Reach Name	County	Owner	Land Use	Grizzly Bear Linkage	Impervious Surface	Riparian Structures	Reach Length (ft)	Active Channel (ft)	LB Canopy Density	LB Buffer (ft)	LB Vegetation	LB Bank Condition	RB Canopy Density	RB Buffer (ft)	RB Vegetation	RB Bank Condition	Stream Order	Riparian Land Type	Channel Sinuosity	Stream Slope	Rosgen Level 1 Channel	Channel Confinement	COMMENTS / DISTURBANCE
Swan River	Swn149	Msla	USFS	NFOR	Y	Y		4000	50	0.7	300	MC	NAT	0.8	300	MC	NAT		FL1C	1.46	1.65	C	M	Riparian Road in Part of Reach-RLF
Swan River	Swn150	Msla	Dual	MIX	Y	N		900	50	0.7	300	MC	NAT	0.7	100	MC	NAT		FL1C	1.20	2.79	B	M	FNF-RLF & 100' RRT; CC-RRT
Swan River	Swn151	Msla	Dual	MIX	Y	N		1225	50	0.7	300	MC	NAT	0.7	300	MC	NAT		FL1C	1.20	2.79	B	M	FNF-RLF; PVT-RRT
Swan River	Swn152	Msla	PVT	NR	N	Y		875	50	0.6	300	MC/D	NAT	0.8	175	MC	NAT		FL1C	1.20	2.79	B	C	Harvests (Thinning)-RRT; Bridge; Cygnet Lake Outlet

